

Office Action Summary

Application No.

10/730,390

Applicant(s)

MELVIN ET AL.

Examiner

CANDAL ELPENORD

Art Unit

2473

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 6-8 and 10 is/are rejected.
- 7) ☒ Claim(s) 2, 4-5, 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date May 20, 2010.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Reopened Prosecution

1. This is in response to an Appeal Brief filed on August 06, 2009. No claims have been amended. No claims have been cancelled. No claims have been added. **Claims 1-10** remains pending in the application.

In view of the appeal brief filed on August 06, 2009, PROSECUTION IS HEREBY REOPENED. Further details set forth below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. **Claims 1, 3** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bubenik et al (US 5,933,429) in view of Wu et al (US 5,165,021).

Regarding claim 1 (original), Bubenik '429 discloses a method for initiating flow control (see, XOFF, XON feedback messages as flow control, col. 3, lines 49-65, col. 4, lines 10-23) in a network multiplexer (fig. 1, fig. 4, switch 1 with data switch 10, col. 3, lines 9-16) that forwards a message descriptor referencing a communications packet received by a receiving port (see, directing message identified by descriptor (i.e. output port queue number), col. 3, lines 34-44) to one or more transmit queues (see, pointer, link list or descriptor identifying a cell in the input and output buffers, col. 6, lines 54 to col. 7, lines 7, fig. 1, fig. 9, see output queue 28 with plurality of buffers), each transmit queue associated with a transmitting port (see, input interface 14 of the cell buffer 26) which transmits communications packets queued to the transmit queue (see, data cell identified by pointer, link number and port number indicative of the output queue descriptor, col. 7, lines 8-16) the method comprising: providing each transmitting port in the network multiplexer with a high threshold (see, XOFF feedback message as the high threshold used for halting transmission from the input to the output port buffer, col. 3, lines 49-65) and a low threshold (see, XON threshold as the low threshold, col. 4,

lines 10-23); when a message descriptor is queued to a transmit queue associated with a transmitting port (see, data cell identified by pointer, link number and port number indicative of the output queue descriptor, col. 7, lines 8-16, col. 3, lines 34-44), and when the transmit queue currently contains a number of message descriptors equal to or greater than the high threshold of the associated transmitting port, sending a flow control request to the receiving port that received the communications packet referenced by the queued message descriptor (see, XOFF feedback messages as the high threshold used for halting transmission from the input to the output port buffer, col. 3, lines 49-65).

Regarding claim 3 (previously presented) Bubenik '429 discloses the method further including: when a transmitting port transmits a packet referenced by a message descriptor to a destination port, releasing the message descriptor, and when the destination port currently contains a number of queued message descriptors equal to one less than the destination port's low threshold (see, XON message permitting the resumption data cell, messages back to the output port buffer, col. 4, lines 11-23), sending a release flow control request to any receiving ports to which a flow control request was sent while the transmit queue contained a number of message descriptors equal to or greater than the high threshold of the associated transmitting port (see, XON message received by the input port buffer from the output port buffer, col. 4, lines 17-23).

Bubenik '429 discloses all the claimed limitation as set forth above except failing to teach or suggest claimed features:

Regarding claim 1, when the transmit queue currently contains a maximum number of message descriptors, discarding the message descriptor.

However, Wu '021 from a similar field of endeavor discloses the above claimed features: **Regarding claim 1**, when the transmit queue currently contains a maximum number of message descriptors (see, the number of the number of queue locations being greater than loadshedding value associating with packet descriptor, col. 13, lines 46-60), discarding the message descriptor (see, discarding the packet descriptor, col. 13, lines 61-64) when the number of free blocks greater than a loadshedding factor by comparing the number of free blocks with the loadshedding factor, col. 2, lines 30-38, lines 48-58, the loadshedding represent an amount of free space in the transmit queue, col. 2, lines 66-68, the transmit queue as link list, col. 3, lines 5-6).

In view of the above, having the multipoint network switch for generating flow control using XOFF and XON of Bubenik '429, The transmit queue with loadshedding where a packet descriptor is discarded when the number of free blocks or queue locations is greater than the loadshedding value of Wu '021 it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching features of Bubenik '429 by implementing the discarding of packet descriptor as taught by Wu '021 into the network switch of Bubenik. The motivation would have been to provide traffic policing by dropping the packet or frame descriptor when the transmit queue threshold is exceeded.

6. **Claims 6, 8, 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Bubenik et al (US 5,933,429).

Regarding claim 6 (previously presented) Bubenik '429 discloses a network multiplexer system (see, fig. 1, fig. 9, Switching apparatus 1 with crossbar switch 10 for generating flow control using XOFF and XON signals) that links physically separate network media (fig. 1, fig. 9, input port 14, link 24, input queue 26 with plurality of buffers and queue 28 of the output buffers, col. 3, lines 9-26) by forwarding packets received from each network medium to a number of network media (see, data cells transmission from the input port to the output port, col. 3, lines 17-26), the network multiplexer system (see, fig. 1, fig. 9, Switching apparatus 1 with crossbar switch 10 for generating flow control using XOFF and XON signals) comprising: a number of ports(fig. 1, fig. 9, input port 14, link 24, input queue 26 with plurality of buffers and queue 28 of the output buffers, col. 3, lines 9-26), each port having a transceiver (fig. 1, fig. 9, input port and output port are capable of receiving and transmitting data cells from one to another) and a communications controller (see, fig. 1, controller 18 coupled to input port 14 and output port 16 respectively); a memory (fig. 1, fig. 9, see, RAM 32 with plurality of input buffers); an internal bus for transferring packets from ports to memory and from memory to ports (fig. fig. 1, fig. 9, crossbar data switch 10 for data cells transport from input queue, input port to output port queue, col. 2, lines 65-68, col. 3, lines 4-9); a receive queue (fig. 1, fig. 4, see, input queue 26) and a transmit queue (fig. 1, fig. 9, output queue 28) associated with each port that contain message descriptors (see, data cell identified by pointer, link number and port number indicative

of the output queue descriptor, col. 7, lines 8-16) that each references a communications packet stored in memory (see, pointer, link list or descriptor identifying a cell in the input and output buffers, col. 6, lines 54 to col. 7, lines 7, fig. 1, fig. 9, see output queue 28 with plurality of buffers); a high threshold (see, XOFF feedback message as the high threshold used for halting transmission from the input to the output port buffer, col. 3, lines 49-65) and a low threshold associated with each transmit queue (see, XON threshold as the low threshold, col. 4, lines 10-23); an indication of ports to which flow control requests have been made associated with each port; and an indication of the number of flow control requests made to a port associated with each port (see, XOFF feedback messages as the high threshold used for halting transmission from the input to the output port buffer, col. 3, lines 49-65).

In view of the above, it would have been obvious to one of ordinary skill in art to associate the XOFF signal with the high threshold and the XON signal as the low threshold in order to perform control using halt signal.

Regarding claim 8 (previously presented) the network multiplexer wherein, when a message descriptor is forwarded to a port for transmission, and when the transmit queue of the port contains a number of message descriptors greater than or equal to the high threshold associated with the port, a flow control request is sent to the port that received the communications packet referenced by the message descriptor (see, XOFF feedback message as the high threshold used for halting transmission from the input to the output port buffer, col. 3, lines 49-65) and a indication that a flow control

request has been sent to the port that received the communications packet is saved by the port to which the message descriptor is forwarded (see, XOFF state bits in the descriptor, col. 3, lines 49-65).

Regarding claim 10 (original) the network multiplexer wherein, when a port removes a message descriptor from the transmit queue associated with the port, and when the number of messages contained in the transmit queue currently equal one less than the low threshold associated with the port (see, XON message permitting the resumption data cell, messages back to the output port buffer, col. 4, lines 11-23), a release flow control message is sent to each port referenced by indications saved by the port (see, XON message received by the input port buffer from the output port buffer, col. 4, lines 17-23).

7. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Bubenik et al (US 5,933,429) in view of Wu et al (US 5,165,021).

Bubenik '429 discloses all the claimed limitation as set forth above except failing to teach or suggest claimed features:

Regarding claim 7, when a message descriptor is forwarded to a port for transmission, and when the transmit queue of the port is full, the message descriptor is dropped.

However, Wu '021 from a similar field of endeavor discloses the above claimed features:

Regarding claim 7, when a message descriptor is forwarded to a port for transmission (see, packet descriptor transmitted to the transmit queue, col. 2, lines 52-54, col. 10, lines 33-35), and when the transmit queue of the port is full, the message descriptor is dropped (see, discarding the packet descriptor, col. 13, lines 61-64, when the number of free blocks greater than a loadshedding factor by comparing the number of free blocks with the loadshedding factor, col. 2, lines 30-38, lines 48-58, the loadshedding represent an amount of free space in the transmit queue, col. 2, lines 66-68, the transmit queue as link list, col. 3, lines 5-6, see, the number of the number of queue locations being greater than loadshedding value associating with packet descriptor, col. 13, lines 46-60).

In view of the above, having the multipoint network switch for generating flow control using XOFF and XON of Bubenik '429, The transmit queue with loadshedding where a packet descriptor is discarded when the number of free blocks or queue locations is greater than the loadshedding value of Wu '021 it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching features of Bubenik '429 by implementing the discarding of packet descriptor as taught by Wu '021 into the network switch of Bubenik. The motivation would have been to provide traffic policing by dropping the packet or frame descriptor when the transmit queue threshold is exceeded.

Allowable Subject Matter

8. Claims 2, 4-5, 9 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Achilles et al (US 6,977,894 B1) and Shiota et al (US 5,946,325)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CANDAL ELPENORD whose telephone number is (571) 270-3123. The examiner can normally be reached on Monday through Friday 8:00AM to 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Bin Yao can be reached on (571) 272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Candal Elpenord/

Examiner, Art Unit 2473

/KWANG B. YAO/

Supervisory Patent Examiner, Art Unit 2473